

Application and Data Server (ADS) and Extended Application and Data Server (ADX) Product Bulletin

MS-ADSxxx-x, MS-ADXxxx-x

Code No. LIT-1201525
Software Release 7.0
Issued December 5, 2014

Refer to the [QuickLIT website](#) for the most up-to-date version of this document.

The Application and Data Server (ADS) and Extended Application and Data Server (ADX) are optional components of the Metasys® system that manage the collection and presentation of large amounts of trend data, event messages, operator transactions, and system configuration data. The ADS is an entry-level server that runs on personal computers and supports up to 5 users. The ADX is a larger scale system that runs on a server operating system to provide extended historical archiving and reporting capabilities. The ADX is offered in several models to support up to 10, 25, 50, or 100 users. As Site Director, the ADS/ADX provides secure communication to a network of Network Automation Engines (NAEs), Network Control Engines (NCEs), and Network Integration Engines (NIEs).

The Site Management Portal UI of the ADS/ADX provides flexible system navigation, user graphics, comprehensive alarm management, trend analysis, and summary reporting capabilities. With the Site Management Portal UI, you can efficiently manage occupant comfort and energy usage, quickly respond to critical events, and optimize control strategies. The ADS/ADX includes an Open Database Connectivity (ODBC) compliant database package for secure storage of historical and configuration data.

The new Metasys UI is designed to enhance our customers' productivity and effectiveness. It allows users to navigate by space to view summaries, trends, and activities, emulating the way they work every day. The new user interface is also optimized for all devices, enabling our customers to work smarter from any device and any location. This release is the first in a series of enhancements that will consolidate existing Metasys user interface products into a single, dramatically improved experience that is accessible from any device.

An optional user interface called the Ready Access Portal provides an intuitive, task-based user experience designed to allow remote operations of your building system. The Ready Access Portal is available for computers or mobile devices and requires only a web browser.

The ADS and ADX support virtual environments, including VMware® and Microsoft® Hyper-V™. Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for more information.

The Metasys system can communicate with cloud-based applications easily and securely. To make this connection, the Metasys system requires minor programming and setup by Johnson Controls. When you are connected, you can access multiple cloud-based applications and features. To learn more, please visit the [Building Management](#) page located on the Johnson Controls website.

Figure 1: ADS/ADX Site Management UI



For the ADX, the Metasys Advanced Reporting System and Energy Essentials report on system configuration performance, energy usage, demand, and cost.

For help deciding whether an ADS or ADX is right for your facility, see [Applications](#).

Note: In this document, the term network engine refers to NAEs, NCEs, and NIEs, unless otherwise noted.

Features and Benefits

Table 1: Features and Benefits

Features	Benefits
Support of IT Standards and Internet Technologies	Allows you to install the Application and Data Server on the existing IT infrastructure within the building or enterprise and is compatible with industry-standard firewalls.
Secure User Access	Authenticates users and authorizes access privileges to protect system integrity.
Flexible System Navigation and Dynamic User Graphics	Allow customization of system presentation for different users to enhance information access and facilitate system operation.
Alarm and Event Management	Routes event messages to building operators for rapid fault diagnosis and response. Creates an audit trail for later detailed analysis.
Long-Term Trend Data Storage	Enables the analysis of building systems performance to identify opportunities for efficiency improvements and the development of predictive strategies.
Optional Metasys Advanced Reporting System and Energy Essentials	Offers a separate login and UI for running and viewing reports on system configuration, performance, energy usage, demand, and cost.

Application and Data Server Platform

Introduction

With the ADS/ADX, Johnson Controls has combined the latest industry-standard software with more than 125 years of control experience to create a powerful information management tool. The ADS/ADX is the point of access into a Building Automation System (BAS) and archives historical and configuration data.

The Metasys user interface has been designed to encourage system use and reduce training needs with intuitive operating procedures. Operators quickly learn to use the system effectively and take full advantage of the ADS/ADX capabilities, which include user graphics, alarm and event management, trend data presentation, system summaries, and reports.

The integration of IT and Internet communication and security technologies enables the ADS/ADX to be used within the existing networking infrastructure of buildings and enterprises. The ADS/ADX can be accessed by multiple client computers from any location on the network, and enterprise systems can read the data in the ADS/ADX database for business planning and energy management purposes.

The Metasys system bridges the gap between the building control systems and enterprise networks to enable a more integrated approach to facility management. The ADS/ADX and Metasys system are wise investments that yield returns to the building owner and operator well into the future.

The ADS and ADX connect to the Ethernet IP network running at the automation and enterprise level of your system, and perform the role of the Site Director that coordinates access to the system for all users.

The ADS and ADX communicate with supported network engines over the IP network. You can use a VPN over a WAN for communication to devices in other buildings or on remote sites. You can also access remote sites via the Internet and an ISP, or by leased line or dial-up service using Remote Access Service (RAS) or the Point-to-Point Protocol (PPP).

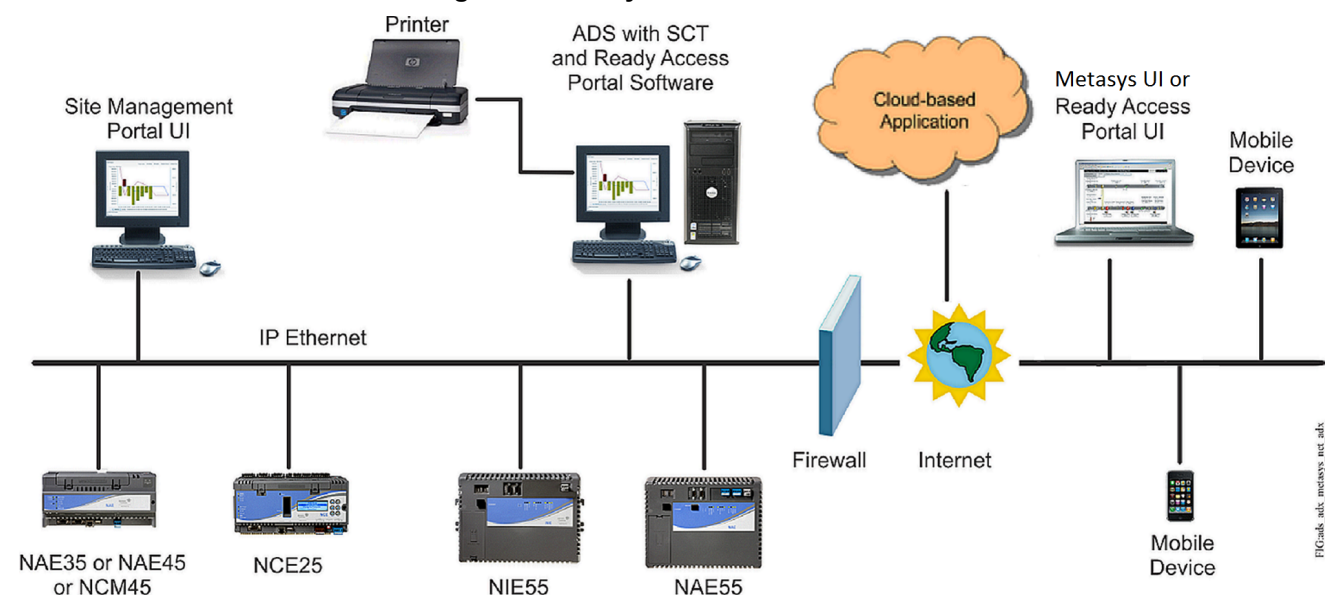
Application and Data Server (ADS)

The ADS platform provides basic historical data management, including an ODBC-compliant database package for storage of trend data, event messages, operator transactions, and system configuration data. The ADS supports up to five users connected to the Site Management Portal UI and provides manual archiving of historical data and standard reporting capabilities. Multiple ADSs can be deployed for long-term, historical data storage. See [Figure 2](#) for an example of a system with an ADS.

The ADS:

- runs on multiple Microsoft® operating systems: Windows® 8.1, Windows 8, and Windows 7 with SP1. See the [Operating Systems and SQL Server Combinations](#) section for more details.
- runs on multiple Microsoft database managers: Microsoft® SQL Server® 2014 Express, Microsoft SQL Server 2012 Express with SP2, and Microsoft SQL Server 2008 R2 Express with SP2. See the section for more details.
- supports virtual environments, including VMware® and Microsoft Hyper-V™. Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for more information.

Figure 2: Metasys Network with an ADS



Extended Application and Data Server (ADX)

The ADX provides more advanced historical data management. The ADX supports up to 10, 25, 50, or 100 users connected to the Site Management Portal UI. The ADX offers manual, automatic, and scheduled archiving of historical data and offers extended reporting capabilities using SQL Server software or third-party software.

The ADX:

- runs on Multiple Microsoft operating systems: Windows® 8.1, Windows 8, Windows 7 with SP1, Windows® Server 2012 R2, Windows Server 2012, Windows Server 2008 R2 with SP1, and Windows Server 2008 with SP2.
- runs on Multiple Microsoft database managers: Microsoft® SQL Server® 2014 Express, Microsoft SQL Server 2012 Express with SP2, Microsoft SQL Server 2008 R2 Express with SP2, SQL Server 2014, SQL Server 2012 with SP2, and SQL Server 2008 R2 with SP2. ADXs using SQL Server software with SQL Server Reporting Services installed also support the Metasys Advanced Reporting system. See [ADX with the Metasys Advanced Reporting System](#).
- supports virtual environments, including VMware® and Microsoft Hyper-V™. Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for more information.

The ADX may be installed in a split configuration. Splitting provides enhanced security for historical data. The ADX software and Site Management Portal UI are installed on one computer (the web/application server computer), and the historical trend, audit, and event data on another computer (the database server computer) running Microsoft SQL Server software. See [ADX Split Configuration](#) for more details.

The ADX can also be installed at Validated Environment sites with the addition of the Metasys for Validated Environments, Extended Architecture application. For more information, refer to the *Metasys for Validated Environments, Extended Architecture Product Bulletin (LIT-12011326)*.

Applications

Use an ADS when:

- the number of network engines becomes larger than a single network engine can handle efficiently as Site Director
- long-term historical data storage needs exceed the capacity of a typical network engine
- the number of simultaneous users logging in exceeds the capacity of a single network engine. The ADS supports up to 5 simultaneous users, and up to 10 to 14 NxE engines. Refer to the *Metasys System Configuration Guide (LIT-12011832)*.

Use an ADX when:

- the Metasys Advanced Reporting System, Energy Essentials, or the Metasys for Validated Environments (MVE), Extended Architecture application is required
- you need to support more than 5 simultaneous users. The ADX supports up to 10, 25, 50, or 100 users, and up to 1,000 NxE engines. Refer to the *Metasys System Configuration Guide (LIT-12011832)*.
- any one of your data storage or access requirements is not met by an ADS

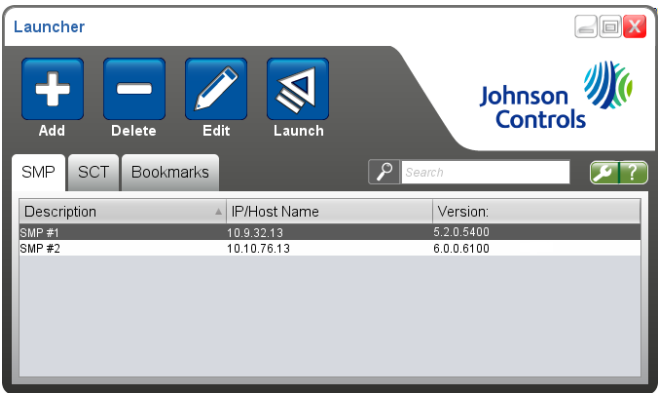
To further help you decide whether an ADS or ADX is right for your facility, consider their respective data storage and data access capabilities. See [Table 5](#) and [Table 6](#).

Access through the Launcher Application

You use the Launcher application ([Figure 3](#)) to connect to the Site Management Portal UI of the ADS/ADX by using a desktop, laptop, or other type of computer connected to a corporate intranet, dedicated BAS, Internet, or telephone line from remote sites. Multiple users can communicate simultaneously with the server, and access is based on the authorization level assigned to individual users.

The Launcher is a software application that you download when you browse to any Release 7.0 Metasys server or supervisory network engine on the building network. After you install the Launcher software, use it to launch the Site Management Portal UI. Opening the Site Management Portal UI from the Launcher replaces the practice of doing so from the web browser. In addition, you can configure the Launcher to browse to any website. Included sites are Metasys software products such as Ready Access Portal and the Metasys Advanced Reporting System, as well as popular websites, such as Google® and Yahoo!®. For more details, refer to the *Launcher Help (LIT-12011742)*.

Figure 3: Launcher Application



User Experience

The Metasys system user interface is a portal into a site that can be tailored to fit the needs of all potential system users. The UI can evolve and scale to match the needs of any single facility or campus of multiple buildings. The UI experience includes the Site Management Portal UI, the optional, mobile-optimized Metasys UI, or the optional Ready Access Portal UI.

Site Management Portal UI

The Site Management Portal UI provides system administrators or building operators online user and system configuration capabilities along with real-time views into their site. The Site Management Portal UI transforms raw data from the site and organizes it into a comprehensive set of information management tools and reports.

The Site Management Portal UI framework features a multiple panel layout that displays different aspects of your building control system at one time. For example, you can display a graphic diagram of an air handling plant along with a multiple point trend graph and the control system logic. This multi-panel layout allows you to identify the cause of an alarm condition from the plant quickly. In another panel, you can display a detailed focus view of a point and monitor the effects of changes to its value on the system graphic in the other panel.

Metasys UI

The Metasys UI allows completely device-agnostic access from smart phones, tablets, and computers. This new user interface is optimized for mobility, with touch-friendly screens that you can access from any type of client device. The Metasys UI displays data in a dashboard format to show the big picture of activity within a space, equipment, or a central plant. The location-based navigation approach allows you to search for any location by name and to bookmark the location in a browser. The Metasys UI includes widgets that allow you to analyze the equipment and potential problems within a space and view trends based on an ad-hoc analysis of any equipment situation. Enhanced security functions, alarm announcement functionality, simplified commanding, and real-time display of values allow you to maintain control of your site, even from mobile devices.

The Metasys UI is included with the ADS and ADX (unified and split) site directors. For more information on Metasys UI, refer to the *Metasys System Product Bulletin* (LIT-1201526).

Ready Access Portal UI

The Ready Access Portal UI provides an intuitive, task-based interface to your Metasys system that can be tailored to meet the remote operations of your building. For details on its many benefits, refer to the *Ready Access Portal Software Catalog Page* (LIT-1900538).

To use the Ready Access Portal UI, install the Ready Access Portal software on a computer with access to your Metasys network. Then, access the Ready Access Portal UI from the Launcher, from a web browser on your computer, or from a mobile device. The computer on which you install Ready Access Portal software can contain Metasys software (with the exception of System Configuration Tool [SCT] with Simulation) or be a stand-alone computer without Metasys software. For a split ADX configuration, Ready Access Portal software can be installed on the web/application server computer or a stand-alone computer.

For details on the Ready Access Portal UI features, refer to the *Ready Access Portal Help* (LIT-12011342).

Note: The Ready Access Portal UI is in the exit phase of its product life cycle. Ready Access Portal functionality will be available in the new mobile optimized Metasys UI.

Features of the Site Management Portal UI

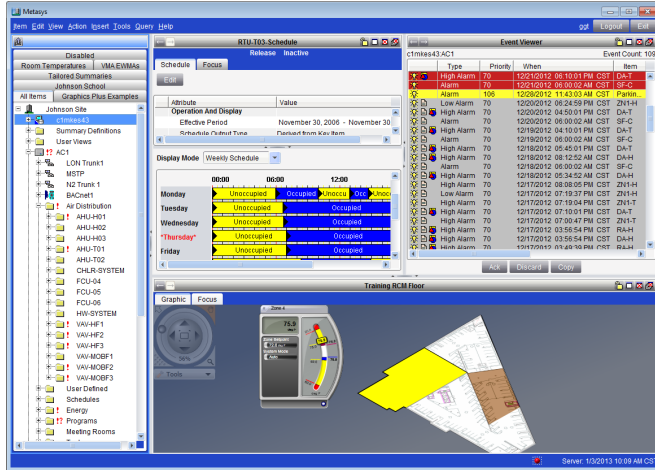
Navigating through the Network

The Site Management Portal UI provides a network navigation tree that allows you to quickly browse through the hierarchy of the entire system ([Figure 5](#)). The navigation tree supports color-coded symbols that allow you to identify alarms or other exception conditions that may require your attention.

Figure 4: Metasys UI



Figure 5: System Navigation



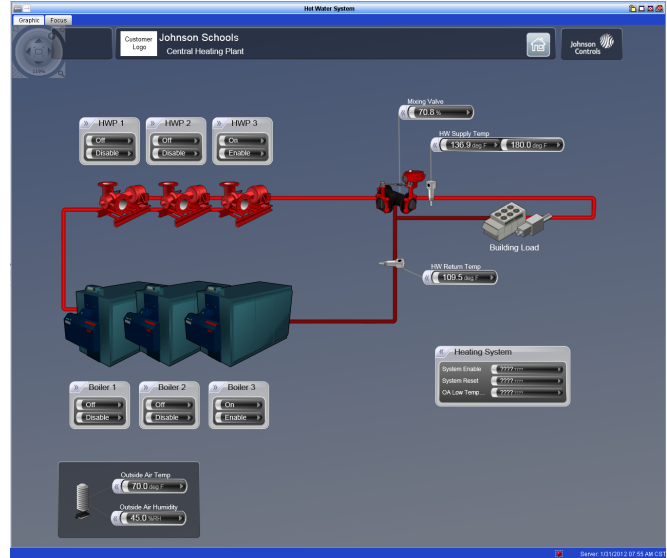
The basic navigation tree represents the physical structure of the network. To further facilitate network navigation, you can create additional user navigation trees called User Views with different system perspectives.

For example, you can assemble all the room temperature values in the building into groups and display them in a series of graphic floor diagrams using the area or zone names. These different navigation trees enable users to view and analyze operating conditions according to their particular responsibility, which may include building security, occupancy management, technical services, energy management, and others.

Realistic Displays with Graphics+

The Metasys system user experience takes another leap forward with a new, industry-leading graphical display capability. The Graphics+ feature provides an intuitive way to interact with your facility by dynamically highlighting the information that requires immediate attention, and providing multiple layers of meaningful facility data in an uncluttered, focused visual display. Data is presented using values, colors, and dynamic motion to represent current activity in the facility, and to quickly and easily indicate potential problems (*Figure 7*). Navigation from a high-level view of the facility to increasing levels of detail is just a click away. Commanding equipment to new states or changing setpoints is also simplified for authorized users.

Figure 6: Graphics+ Example



Graphics are integrated with the Site Management Portal UI, the System Configuration Tool (SCT), and the Ready Access Portal UI on client computers that have installed Microsoft Silverlight® plug-in technology. The authoring component of the Graphics+ feature is called the Graphics Generation Tool, a software application that can be installed on a computer with the Metasys system or on a stand-alone computer. The Graphics Generation Tool:

- allows you to create system graphics using any combination of HVAC, Fire, Lighting, Security, and Network symbols
- allows you to create Floor Plan graphics containing information about overall buildings, floors, and rooms within a floor
- enables you to import AutoCAD® drawings that become Floor Plan graphics
- integrates with the Metasys archived site database and the online Site Management Portal to create bindings in dynamic shapes that represent monitored and controlled equipment
- offers 30-plus templates that serve as starting points for creating new graphics
- provides thermodynamic floor plans that display snapshots of all zone temperatures and use color to help you quickly identify temperature deviations

For more details, refer to the *Graphics+ Product Bulletin (LIT-12011698)*.

Figure 7: Graphics+ Example

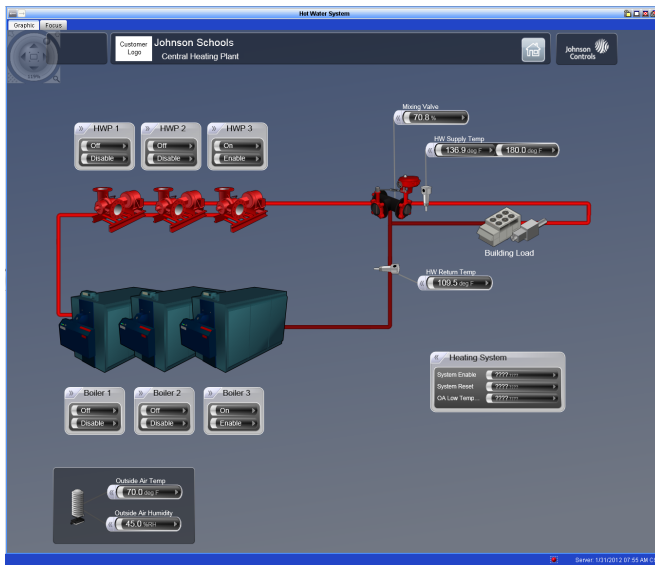
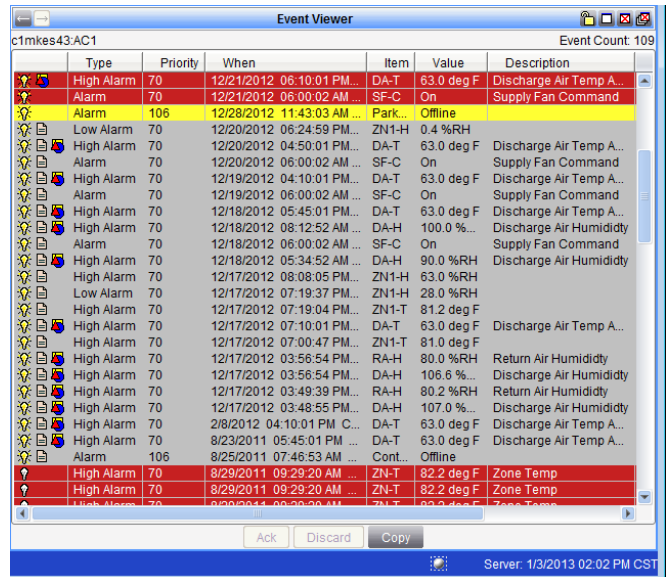


Figure 8: Event Viewer



Global Search

This enhanced search feature allows you to search the Metasys system for multiple objects that meet specific criteria based on naming and object type. Using the global search, you can manage lists of objects, which can be used by other features for commanding, trending, reporting, and object selection.

Global Command

This additional command feature allows you to send a single command to multiple objects and view a log of the command results.

Managing Alarm and Event Messages

To make sure you are notified immediately of important alarms and events, the Site Management Portal UI alerts you with a pop-up window showing the most recent highest priority alarm message detected by the system. This window presents all important data pertaining to the alarm message.

For a system-wide overview of alarms and events, the Site Management Portal UI provides an Event Viewer that displays all system events in chronological order (Figure 8).

The Event Viewer allows you to identify the most recent conditions in the building, determine possible relationships between events, and locate the source of error conditions. The Event Viewer also allows you to acknowledge and annotate any of the displayed event messages.

All event messages detected by network engines are routed to the ADS/ADX for archiving on the ODBC-compliant database. You can configure the server to route event and transaction messages to printers, pagers, or e-mail destinations, or other servers.

To display operator transactions, the Site Management Portal UI provides an Audit Viewer. The Audit Viewer is sortable so only those transaction messages of particular interest to you appear.

Trend Analysis

For optimal performance and to fine-tune the building control systems, current and historical data can provide useful diagnostic information. The Site Management Portal UI provides comprehensive trend recording and trend display capabilities (Figure 9). Trend data is collected from the field points and buffered temporarily in the network engines. The trend data can be uploaded automatically and periodically to the ADS/ADX and archived in the ODBC-compliant database.

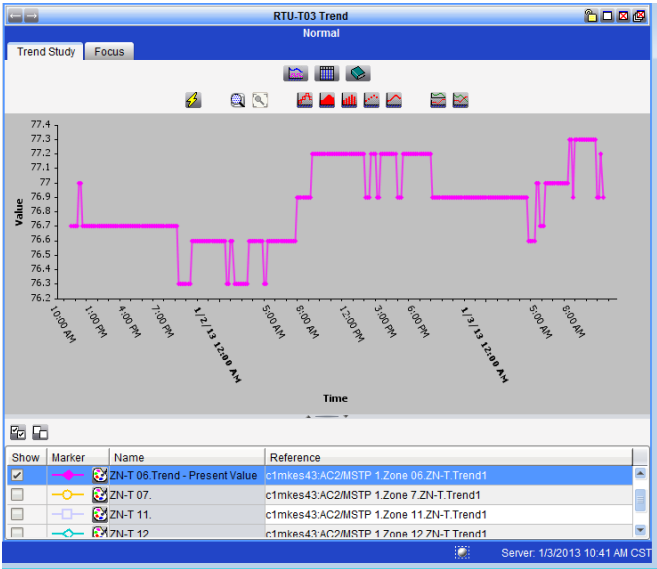
Metasys software supports both Interval (for example, every 10 minutes) and Change-of-Value (for example, when a temperature changes 0.5°) sampling methods for storing trend samples. Data from both methods can be combined in a single graph.

You can view and analyze trend data as a graph or a table in a display panel of the Site Management Portal UI. The trend values give an indication of system performance, allowing you to identify opportunities for efficiency improvements and develop predictive maintenance strategies. All trend features support copying to the clipboard for use in another program.

For a more detailed analysis of system-wide operational performance, you can create a Trend Study. Trend Studies provide a powerful management tool to analyze and compare current and historical operational data. Trend Studies also help you identify potential problems before they occur, diagnose current and past alarm conditions, optimize energy consumption, and reduce maintenance costs.

The Trend Viewer allows you to view multiple trend extensions based on the ad hoc selection of items from the results of a global search or from the navigation tree. This feature provides another option in trending.

Figure 9: Trend Display

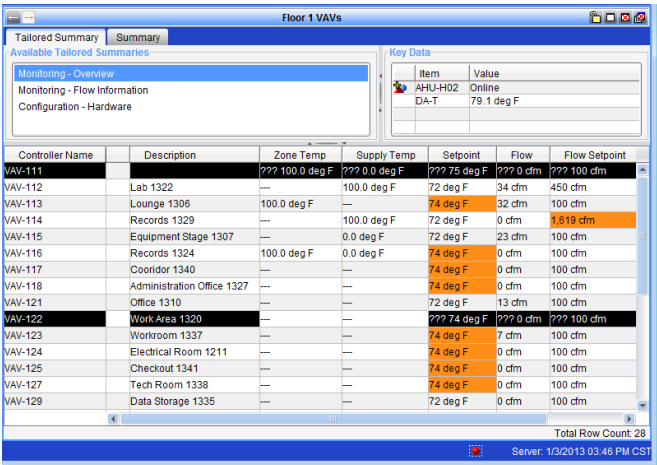


User Views and Tailored Summaries

User views are user-defined navigation trees that contain references to selected items found in the All Items navigation tree. You can create user views to group commonly used items and graphics together. You can also assign user views to particular user groups, such as building security and energy management.

Expanding the capability of user views further, Tailored Summaries use table-based user views to provide summary views of Metasys system items ([Figure 10](#)).

Figure 10: Tailored Summary



These summaries consist of sortable rows and columns tailored to contain information of your choosing. Tailored Summaries allow you to view, modify, and command large quantities of similar data in tabular format. Similar data, for example, may be all VAV boxes on a floor of a building, showing current temperatures, setpoints, flows, and minimum and maximum settings. Using this information, you can quickly analyze facility operation and troubleshoot for possible problems.

To help you get started with Tailored Summaries, a set of pre-built Summary Definitions can be imported into your site. These summary definitions fit into three categories: Configuration, Diagnostic, and Monitoring. The Device and Network Diagnostics definitions are intended for site administrators. The Mechanical Equipment definitions with links to graphics and Key Point definitions are useful for service professionals.

Tailored Summaries are configurable in the Site Management Portal UI, but available in both the Site Management Portal and Ready Access Portal UIs.

Reports

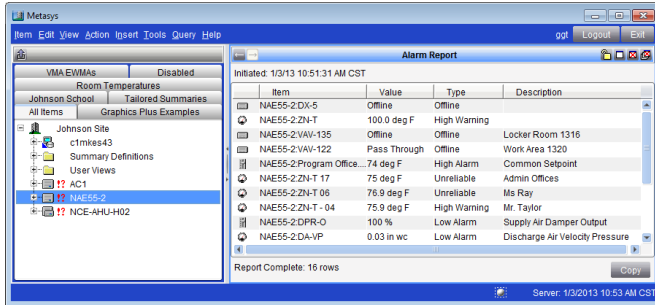
Reports offer a snapshot view of the current exception situations and summary data in the entire site or selected area of the site and allow you to locate points that need attention. You define the desired reports, and the ADS/ADX displays the resulting data in the Report Viewer on the Site Management Portal UI.

The following reports are available:

- Alarm Report - points in the alarm state
- Offline Report - devices that do not respond
- Disabled Report - alarming that has been disabled
- Override Report - operator overridden points
- Supervisory Override Report - points with the Override flag set to True

Reports list all points in the given condition within the selected area or group of points. Conditions can be alarm, offline, disabled, or overridden. [Figure 11](#) shows an example of an Alarm Report. You can refresh the completed report to find any new points since the report was run, and you can cancel a report query at any time.

Figure 11: Alarm Report



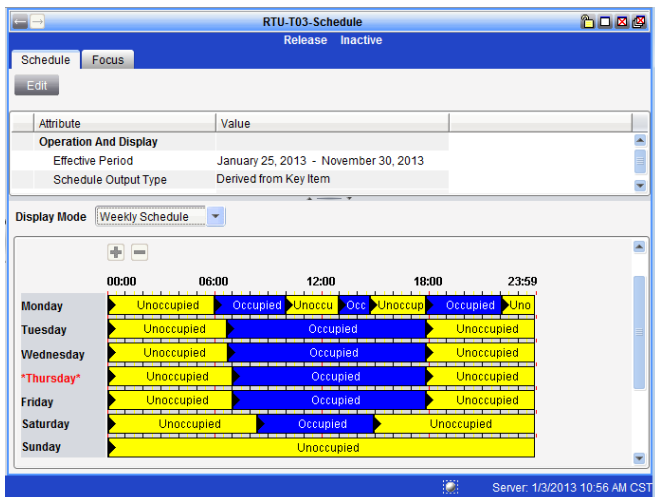
The Scheduled Reports feature provides a reporting service on a server that generates summary reports based on object lists and report schedules ([Figure 11](#)).

Configuring Schedules

The Schedule feature allows you to define the days and times for operational activities such as starting and stopping equipment and changing setpoints. You can schedule activities for one or more days of the week, holidays, or particular calendar dates.

The Site Management Portal UI provides a graphic representation of the weekly schedule and calendar for creating and editing the schedules ([Figure 12](#)). Schedules actually run in a network engine on the network, but you can configure them to send commands to equipment throughout the whole building or site.

Figure 12: Schedule User Interface



System Security

The Metasys system offers secure user access by authenticating the user name and password of any user who attempts to connect to the system.

The Site Management Portal UI also supports authentication using the Microsoft Active Directory® directory service. Refer to the *Security Administrator System Technical Bulletin (LIT-1201528)* for details.

Note: The Metasys Advanced Reporting System and the Ready Access Portal UI do not support synchronization with the Active Directory directory service.

When a valid user account has been identified, the connection is authorized and system access is granted based on the access privileges defined by the Metasys security administrator system for the user account.

Access privileges are assigned by system categories and action sets to individual users or to a group of users with the same role. System categories define the type of building equipment and points accessible when operating the system. Action sets define the authorized operation level. Users may be authorized to only view items or may be allowed to also acknowledge alarms and issue commands. At the highest level, users are authorized to modify system configuration parameters.

The Audit Trail on the ADS/ADX records user activities such as alarm acknowledgment, sending commands, and point modification.

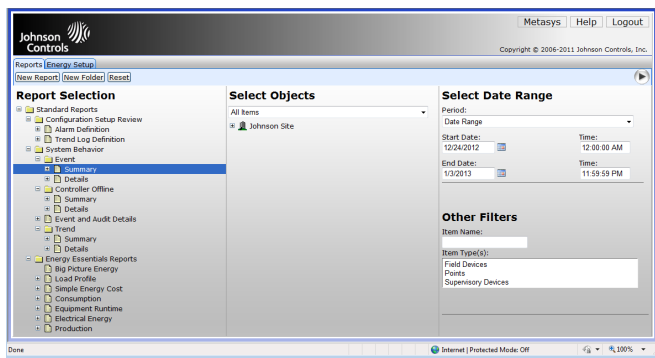
In addition to user authentication, standard IT security technologies (including firewall programs and encoding protocols) protect the building automation system and network from unauthorized access.

ADX with the Metasys Advanced Reporting System

The Metasys Advanced Reporting System provides historical and configuration data reporting capabilities in a UI that is separate from the Site Management Portal UI ([Figure 13](#)). This system allows authorized users to run reports to review the configuration and performance of the Metasys system.

The Metasys Advanced Reporting System UI allows you to run reports easily and immediately view them in a web browser ([Figure 14](#)).

Figure 13: Metasys Advanced Reporting System

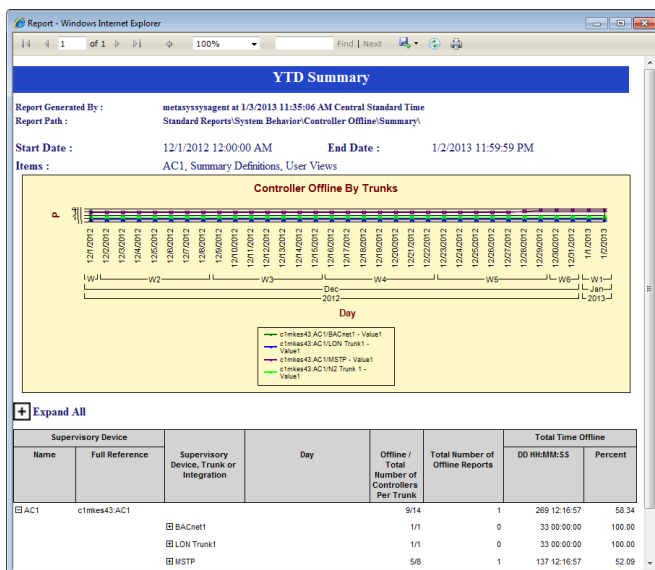


The following reports are available for the points included in the reporting system user views:

- Configuration Setup Review
- System Behavior
- Trend Report - statistical calculations and Mean Kinetic Temperature (MKT)
- Trend Detail Report - summary data

You can export a report and save it in a variety of formats, such as Microsoft Excel® or PDF, for later use.

Figure 14: Metasys Advanced Reporting System Example Report



The Metasys Advanced Reporting System is available on ADXs running SQL Server software with SQL Server Reporting Services. The Metasys Advanced Reporting System is an option during the ADX installation. Users are authorized with the Advanced Reporting option in the Security Administrator System. For details, refer to the *Metasys Advanced Reporting System and Energy Essentials Help (LIT-12011312)*.

ADX with Energy Essentials

An add-on to the Metasys Advanced Reporting System, Energy Essentials provides seven fundamental energy reports that no site should be without. From the Energy Overview report that displays a high-level view of normalized energy use across your site, to the Load Profile report that graphically presents your daily electrical demand, stored data is transformed into meaningful information with the Metasys system.

Energy Essentials offers the following seven reports:

- Big Picture Energy
- Consumption
- Electrical Energy
- Production
- Simple Energy Cost
- Load Profile
- Equipment Runtime

For details, refer to the *Metasys Energy Essentials Catalog Page (LIT-1900600)*.

Figure 15: Metasys Energy Essentials System

Milwaukee

Last Quarter's Electrical Report



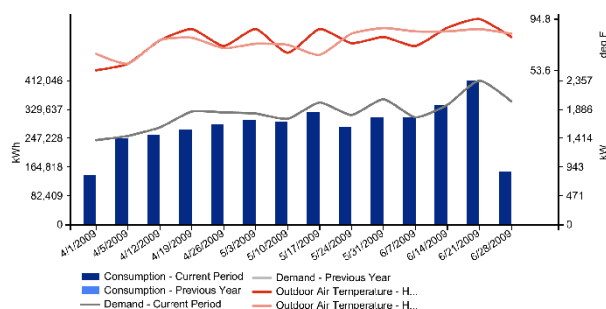
General

Report Generated By: metasyssysagent
 Report Generation Date/Time: Friday, August 14, 2009 9:16 AM
 Time Zone: Central Daylight Time
 Report Path: Standard Reports\Energy Essentials Reports\Electrical Energy\
 Duration: 4/1/2009 12:00:00 AM - 6/30/2009 11:59:59 PM
 Functional Area (sq ft): 10,543
 Location:
 Items: Electricity
 By Billing Period: False
 Chart Weather Data Type: Outdoor Air Temperature - High

Weather Data

	Current Period	Previous Year
Outdoor Air Temp Avg (deg F):	56.22	57.04
Outdoor Air Temp High & Low (deg F):	94.81, 29.75	87.50, 25.64
Outdoor Air Enthalpy Avg (no units):		
Outdoor Air Enthalpy High & Low (no units):		
Outdoor Air Humidity Avg (%RH):		
Outdoor Air Humidity High & Low (%RH):		
Heating Degree Days (65.00 deg F):	889	843
Cooling Degree Days (65.00 deg F):	158	135

Overview



[Expand All](#)

Consumption and Demand

Location	Meter Name	When		Consumption (kWh)	Energy Intensity (kBtu/sq ft)	Peak Demand		Power Factor (%)	Reactive Power (kVAR)
		Month	Day			Peak Value (kW)	When		
Total				3,921,284	20,887.65	2,357	6/24/2009 11:00 AM	0.84	48.06
Total 507				3,348,768	38,452.81	2,357	6/24/2009 11:00 AM	0.76	79.28
Total Glendale				572,516	5,688.50	255	6/17/2009 6:00 AM	0.88	32.45

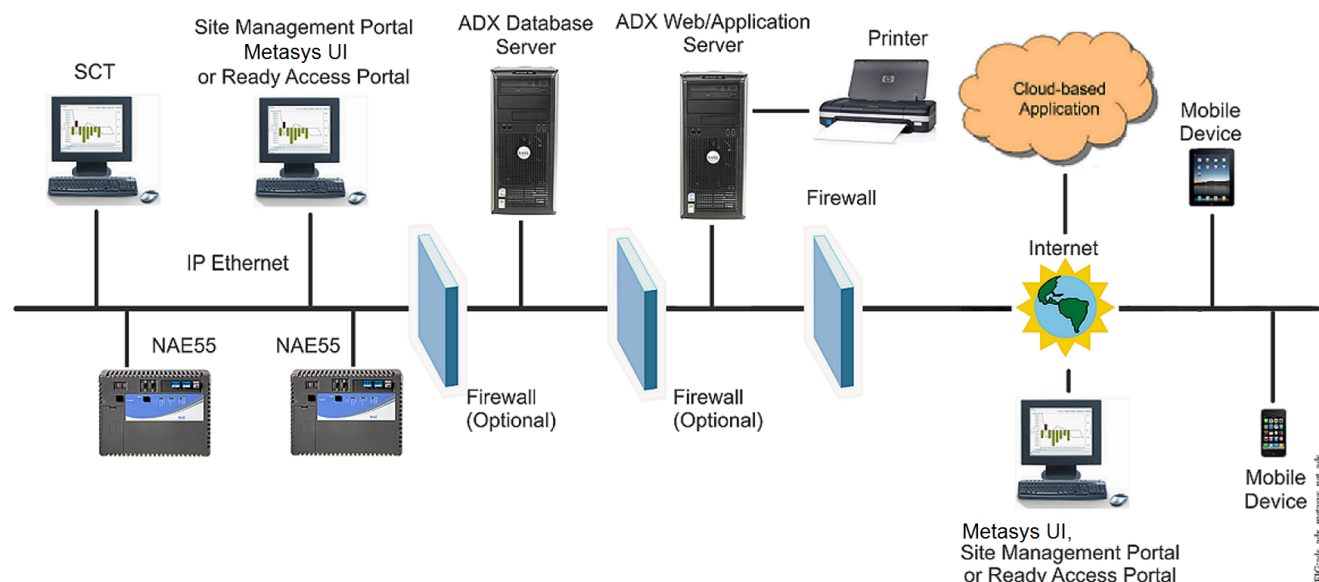
Note: Cloud-based applications are not available for all sites.

ADX Split Configuration

The ADX software and its associated database software are often installed on one computer (a unified ADX). However, the ADX also can be installed in a split configuration, which involves installing ADX-related software on two computers. Splitting provides enhanced security for historical data. Using the ADX in a split configuration allows you to locate the Metasys system databases behind a firewall, which reduces the risk of exposing Metasys system data to unauthorized users on the Internet. The split configuration also allows you to locate Metasys system databases on an existing SQL Server computer using existing resources (hardware, software, and technical personnel), potentially lowering the cost of installing and monitoring the Metasys system.

In an ADX split configuration, the computer running SQL Server software is known as the database server computer, and it stores historical Metasys system data. The ADX software itself and all required ADX prerequisites reside on a second computer, known as the web/application server computer. In a split configuration, the SCT must reside on a third computer. Users browse to the web/application server computer to see system data. The database server computer cannot be used as a historical data repository by more than one web/application server computer.

Figure 16: Metasys Network with an ADX in Split Configuration



Extended Application and Data Server (ADX) Split Configuration Guidelines

Table 2: ADX Split Configuration Guidelines

Product	Guideline
ADX Web/Application Server	<p>Must be loaded on a full server.</p> <p>Note: ADX software and all required ADX prerequisites reside on a web/application server. Users browse to the web/application server to see system data.</p> <p>Note: You may install Metasys Advanced Reporting System or Energy Essentials on this server.</p>
ADX Database Server	<p>Must be loaded on a full server.</p> <p>Note: SQL Server software resides on the ADX database server. The database server stores historical Metasys system data and serves as a historical data repository for the web/application server.</p>
Ready Access Portal	<p>Must be loaded on a full server.</p> <p>May be loaded on the same server as the ADX web/application server. During Ready Access Portal software installation, select the ADX database server in the Database Server window. In this configuration, the Ready Access Portal application resides on the ADX web/application server and the Ready Access Portal database resides on the ADX database server.</p> <p>May be loaded on a third server that is separate from the ADX web/application server and ADX database server. In this configuration, during Ready Access Portal software installation, select the ADX database server in the Database Server window.</p>
Software Configuration Tool (SCT)	<p>May be loaded on a full server or desktop computer.</p> <p>May be loaded on the same server as the ADX web/application server.</p> <p>May be loaded on a third server that is separate from the ADX web/application server and ADX database server.</p>
SCT and Ready Access Portal	<p>May both be loaded on the same full server. Or, load the Ready Access Portal software on a full server and SCT on another computer (full server or desktop).</p>

Included Software Tools

Export Utility

The Export Utility extracts historical trend, alarm, and audit data from the system and presents the data in a variety of formats. Using these flexible formats, in programs such as Microsoft Excel and Access, users can easily sort, compare, and archive data in spreadsheets and databases. For details, refer to the *Metasys Export Utility Product Bulletin (LIT-1201800)*.

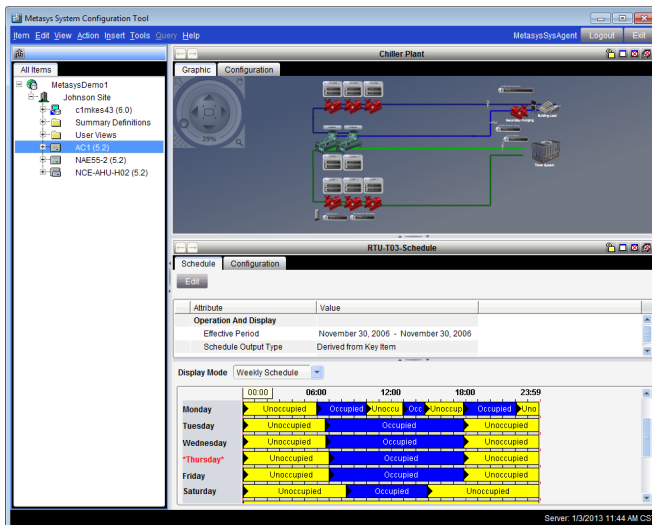
Metasys Database Manager

The Metasys Database Manager allows you to monitor, manage, purge, and back up Metasys system historical databases on an ADS/ADX. For details, refer to the *Metasys Database Manager Help (LIT-12011202)*.

System Configuration Tool (SCT)

The SCT is included with the ADS/ADX software package (Figure 17). It allows you the convenience of defining and modifying Metasys system databases offline, supported by wizards that guide you through the entire process. SCT uses the same Metasys user interface used with all other components of the system (ADS/ADXs and network engines). You do not have to learn a different mode of operation when working with SCT.

Figure 17: System Configuration Tool



With SCT, you can perform all configuration features required to set up an automation system, including:

- defining all ADS/ADXs and network engines
- defining field controllers
- configuring field points and operating parameters
- setting up the navigation tree structure including user navigation trees
- configuring system features such as user graphics, programmed logic control sequences, alarms, trends, and event message destinations
- configuring spaces and equipment for the Metasys UI
- configuring Demand Limit and Load Rolling (DLLR) to monitor energy meters for electricity, gas, steam, or water, and automatically shed equipment loads according to user-defined levels. Demand Limit helps manage utility demand charges. Load Rolling controls equipment operating levels to reduce total energy consumption.
- creating optimal start logic
- simulating control logic
- downloading, uploading, and archiving network engine configuration databases

Controller Configuration Tool (CCT)

CCT is used to configure, simulate, and commission Field Equipment Controllers (FECs), Advanced Application Field Equipment Controllers (FACs), Input/Output Modules (IOMs), and VAV Modular Assembly (VMA) 16 devices on the MS/TP bus. For details, refer to the *Controller Tool Help (LIT-12011147)*.

Ordering Information

For complete ordering information, refer to the *Metasys System Software Purchase Options Product Bulletin (LIT-12011703)*.

Table 3: ADS/ADX Ordering Information for New or Upgrade Software

Base Product Code	Product Descriptions	New Software Product Code Number	Upgrade Software Product Code Number	Migration Software Product Code Number
MS-ADS05U	Application and Data Server For up to 5 users	MS-ADS05U-0	MS-ADS05U-6	MS-ADS05U-8
MS-ADX10U	Extended Application and Data Server For up to 10 users	MS-ADX10U-0	MS-ADX10U-6	MS-ADX10U-8
MS-ADX10SQL	Extended Application and Data Server For up to 10 users Includes Microsoft® SQL Server® 2012 software with core license	MS-ADX10SQL-0	MS-ADX10SQL-6	MS-ADX10U-8
MS-ADXSWO	Extended Application and Data Server For up to 25 users	MS-ADXSWO-0	MS-ADXSWO-6	MS-ADXSWO-8
MS-ADXSWOSQL	Extended Application and Data Server For up to 25 users Includes Microsoft SQL Server 2012 software with core license	MS-ADXSWOSQL-0	MS-ADXSWOSQL-6	MS-ADXSWOSQL-8
MS-ADX50U	Extended Application and Data Server For up to 50 users	MS-ADX50U-0	MS-ADX50U-6	MS-ADX50U-8
MS-ADX50SQL2	Extended Application and Data Server For up to 50 users For use on server with dual processors or 8 cores ¹ Includes Microsoft SQL Server 2012 software with core license	MS-ADX50SQL2-0	MS-ADX50SQL2-6	MS-ADX50SQL2-8

Table 3: ADS/ADX Ordering Information for New or Upgrade Software

Base Product Code	Product Descriptions	New Software Product Code Number	Upgrade Software Product Code Number	Migration Software Product Code Number
MS-ADX50SQL	Extended Application and Data Server For up to 50 users For use on server with single processor or 4 cores Includes Microsoft SQL Server 2012 software with core license	MS-ADX50SQL-0	MS-ADX50SQL-6	MS-ADS50SQL-8
MS-ADX100U	Extended Application and Data Server For up to 100 users	MS-ADX100U-0	MS-ADX100U-6	MS-ADX100U-8
MS-ADX100SQL2	Extended Application and Data Server For up to 100 users For use on server with dual processors or 8 cores ¹ Includes Microsoft SQL Server 2012 software with core license	MS-ADX100SQL2-0	MS-ADX100SQL2-6	MS-ADX100SQL2-8

¹ Servers with dual processors or 8 cores are **recommended** for ADX 50 user and 100 user software.

Operating Systems and SQL Server Combinations

The following table lists by operating system the Microsoft® SQL Server® software editions that have been fully qualified by Johnson Controls for Release 7.0. You can select other combinations, but we recommend that you select from the following pairings.

Table 4: Recommended Operating System and SQL Server Combinations

Operating System	Database Software								
	ADS					ADX			
	SQL 2014 Express, 64-bit	SQL 2012 Express SP2, 64-bit	SQL 2008 R2 Express SP2, 64-bit	SQL 2008 R2 Express SP2, 32-bit	SQL 2008 Express SP3, 32-bit	SQL 2014, 64-bit	SQL 2012 SP2, 64-bit	SQL 2008 R2 SP2, 64-bit	SQL 2008 R2 SP2, 32-bit
Windows® 8.1 Pro and Windows 8.1 Enterprise (64-bit)	x	x	x						
Windows 8 Pro and Windows 8 Enterprise (64-bit)	x	x	x						
Windows 7 Professional, Enterprise, and Ultimate Editions with SP1 (64-bit)	x	x	x						
Windows 7 Professional, Enterprise, and Ultimate Editions with SP1 (32-bit)				x	x				
Windows Server® 2012 R2 Standard Edition (64-bit)						x	x	x	
Windows Server 2012 Standard Edition (64-bit)						x	x	x	
Windows Server 2008 R2 Standard and Enterprise Editions with SP1 (64-bit)						x	x	x	
Windows Server 2008 Standard and Enterprise Editions with SP2 (32-bit)									x

ADS and ADX Application Tables

Table 5: Data Access Ability on an ADS and ADX

Characteristic	ADS	ADX	Questions to Ask
Before Archiving Data			
Standard Reports	Yes <ul style="list-style-type: none"> Trend Studies Export Utility 	Yes <ul style="list-style-type: none"> Trend Studies Export Utility Metasys Advanced Reporting system Energy Essentials 	Which kind of standard reporting do you need? <ul style="list-style-type: none"> If you need only historical values for selected points, install an ADS. If you need historical point values, offline conditions, audits, events, and more, install an ADX with the Metasys Advanced Reporting system.
Custom Reports	Yes - with Third-Party Tools Various third-party tools	Yes - with Third-Party Tools Various third-party tools	Do you need custom reporting? <ul style="list-style-type: none"> If you do not need custom reporting, install an ADS. If you need custom reporting, install an ADX and plan for any necessary expert help to create and interpret custom reports using third-party tools.
After Archiving Data			
Merging of Archives for Data Access and Reporting	Yes - with Third-Party Tools Various third-party tools	Yes - with Third-Party Tools <ul style="list-style-type: none"> SQL Server software Microsoft Reports software 	Do you need to access or query data from more than one archive at a time? <ul style="list-style-type: none"> If you would like to access data from each archive separately, install an ADS. If you would like to access data from several archives or all your archives, use third-party tools to merge the archives, install an ADX, and query the complete merged archive file. Plan for any necessary expert help.

Table 6: Data Storage Characteristics of the ADS and ADX

Characteristic	ADS	ADX	Questions to Ask
Database Capacity¹	10 GB (database limit for SQL Server 2008 Express R2 software) 4 GB (database limit for SQL Server 2008 Express Software)	40 GB (minimum free space required on the computer after ADX installation) The database can expand until all hard disk space is used.	How far back do you need to collect data before archiving? <ul style="list-style-type: none"> In a typical system², the ADS database reaches the database capacity in approximately 3.5 years. In a typical system³, the ADX database reaches the 40 GB capacity in approximately 2.5 years.
Archive Type Available	Manual	<ul style="list-style-type: none"> Manual Automatic Scheduled 	Do you need automatic or scheduled archiving? <ul style="list-style-type: none"> If you do not need automatic or scheduled archiving, an ADS may be appropriate. You must archive manually when the database is full to avoid offline Metasys server conditions. If you require automatic or scheduled archiving, install an ADX. Automatic archiving prevents offline Metasys server conditions.
Archiving Tools	<ul style="list-style-type: none"> Metasys Database Manager SQL Server Management Studio Express software 	<ul style="list-style-type: none"> Metasys Database Manager Microsoft SQL Server software 	Do you have experienced Information Technology specialists on hand? If you have experienced IT specialists on site, they may require specific third-party archive management tools or prefer the powerful SQL Server software capabilities of the ADX.

1 Be aware of the physical limitations of hard disk space available on the computer. You must have room for all installed programs, the active database, archives, temporary database files, and other supporting files. Automatic archiving does not take place if no free disk space is available.

2 A typical system consists of an ADS and 4 to 5 NAEs with approximately 20% of points trended at 30-minute intervals.

3 A typical system consists of an ADX and 15 NAEs with approximately 20% of points trended at 15-minute intervals.

Table 7: Client Computer Requirements for Site Management Portal UI , SCT, and Metasys UI

	Site Management Portal UI System Configuration Tool (SCT)	Metasys UI
Recommended Processor¹	1.8 GHz or higher Pentium® 4 processor (800 MHz Pentium 4 processor minimum)	1.8 GHz or higher Pentium® 4 processor (800 MHz Pentium 4 processor minimum)
Recommended Random Access Memory (RAM)	4 GB (1 GB minimum) ¹	4 GB (1 GB minimum) ¹
Hard Disk Capacity	40 GB hard disk (minimum)	40 GB hard disk (minimum)
Supported Operating System	Windows 8.1 Pro or Windows 8.1 Enterprise (64-bit) Windows 8 Pro or Windows 8 Enterprise (64-bit) Windows 7 Professional, Enterprise, or Ultimate Edition with SP1 (32-bit or 64-bit) Windows XP® Professional with SP3 (32-bit) Apple® OS X® 10.9 Mavericks Apple OS X 10.8 Mountain Lion	Windows 8.1 Pro or Windows 8.1 Enterprise (64-bit) Windows 8 Pro or Windows 8 Enterprise (64-bit) Windows 7 Professional, Enterprise, or Ultimate Edition with SP1 (32-bit or 64-bit) Windows XP® Professional with SP3 (32-bit) Apple® OS X® 10.9 Mavericks Apple OS X 10.8 Mountain Lion

Table 7: Client Computer Requirements for Site Management Portal UI , SCT, and Metasys UI

	Site Management Portal UI System Configuration Tool (SCT)	Metasys UI
Supported Web Browsers	<p>Windows Internet Explorer® Version 8, 9, 10, or 11</p> <p>Apple Safari® version 6.0.5 and 7.0</p> <p>Other browsers, such as Google® Chrome and Mozilla® Firefox®, may also be used but are not fully supported.</p> <p>Note: In Internet Explorer 11, select the Use Microsoft compatibility lists option, found under Tools > Compatibility View Settings, to ensure that websites appear and function correctly.</p> <p>Note: In OS X, you cannot view Graphics+ graphics in the Site Management Portal UI.</p> <p>Note: You use the web browser to download the Launcher application. After you install the Launcher application, you use the Launcher, not the web browser, to log in to the Site Management Portal (SMP) UI.</p>	<p>Windows Internet Explorer® 10 and 11</p> <p>Google® Chrome™ version 30 or later</p> <p>Apple® Safari® 7 or later</p> <p>Note: In Internet Explorer 11, select the Use Microsoft compatibility lists option, found under Tools > Compatibility View Settings, to ensure that websites appear and function correctly.</p> <p>Note: Metasys UI does not support InPrivate Browsing. To exit InPrivate Browsing, close the browser window and open a new browser window.</p> <p>Note: Metasys UI does not support incognito mode. To exit incognito mode, click or tap the X icon of the browser window or tab and then open a new browser window or tab. For more information on incognito mode in Google Chrome, click here.</p> <p>Note: Metasys UI does not support private browsing. To exit private browsing, click or tap Private in the browser window.</p> <p>Note: Other web browsers, such as Mozilla® Firefox®, are not officially supported by the Metasys UI. However, the Metasys UI may appear and function appropriately in these web browsers.</p>
Supported Mobile Phone Operating Systems	N/A	<p>Android™ 4.4 or later</p> <p>iOS 7.0 or later</p>
Supported Tablet Operating Systems	N/A	<p>Android 4.4 or later</p> <p>iOS 7.0 or later</p>
Network Communication	<p>Ethernet network interface card 10/100/1,000 Mbps</p> <p>Note: The ADS supports only one network interface card.</p>	<p>Ethernet network interface card 10/100/1,000 Mbps</p> <p>Follow these guidelines and recommendations:</p> <ul style="list-style-type: none"> For optimal performance, use a wired connection for computers browsing to the Metasys UI. Alternatively, for mobile phones and tablets, you can use a wireless IEEE 802.11 connection on a 4G network. Browsing to the Metasys UI over a 3G communications network is possible, but it is not recommended or supported. High latency (also called lag or wait time) can cause the Metasys UI to disconnect from the ADS or ADX. Signal strength impacts the overall performance of the Metasys UI. For the best results, ensure you have a strong signal for your wireless connection.
Monitor	1024 x 768 or higher resolution and 16-bit or higher color depth	1024 x 768 or higher resolution and 16-bit or higher color depth

Technical Specifications

Application and Data Server (ADS) System Requirements

Table 8: Application and Data Server (ADS) System Requirements (5 Users)

Recommended Computer Platform ¹	3.4 GHz Intel® Core™ Quad processor	
	2 x 500 GB hard disk (RAID 1) ² with 40 GB free space after installation of all prerequisite software and before installation of ADS software. Configure RAID 1 (mirroring) with disk write-caching turned on.	
	DVD drive Note: Prerequisite software includes the supported operating system, database software, .NET Framework, and any other software or service packs required for your ADS configuration.	
Recommended Memory ⁴	8 to 16 GB RAM (64-bit systems)	
	4 GB RAM (32-bit systems)	
Supported Operating Systems ⁵ and Database Software	Windows 8.1 Pro and Windows 8.1 Enterprise Editions (64-bit)	
	Supports Microsoft SQL Server® 2014 Express (64-bit) ⁶ , Microsoft SQL Server 2012 Express with SP2 (64-bit), or Microsoft SQL Server 2008 R2 Express with SP2 (64-bit)	
	Windows® 8 Pro and Windows 8 Enterprise Editions (64-bit)	
	Supports Microsoft SQL Server® 2014 Express (64-bit) ⁶ , Microsoft SQL Server 2012 Express with SP2 (64-bit), or Microsoft SQL Server 2008 R2 Express with SP2 (64-bit)	
	Windows 7 Professional, Enterprise, and Ultimate Editions with SP1 (32-bit or 64-bit)	
	Supports Microsoft SQL Server 2014 Express (32-bit or 64-bit) ⁶ , Microsoft SQL Server 2012 Express with SP2 (32-bit or 64-bit), or Microsoft SQL Server 2008 R2 Express with SP2 (32-bit or 64-bit)	
	Note: The OS and software must both be 32-bit or 64-bit.	
Supported Virtual Environments	Microsoft Hyper-V™, VMware®	
Supported User Interfaces	Site Management Portal (SMP)	
	Metasys UI	
	Ready Access Portal	
Additional Software Included with the ADS	CCT software	Launcher software
	Export Utility software	Microsoft SQL Server 2012 Express software with SP2 (64-bit)
	Metasys Database Manager software	Microsoft SQL Server 2008 R2 Express software with SP2 (32-bit and 64-bit)
	SCT software	Microsoft .NET Framework Version 3.5 SP1

Table 8: Application and Data Server (ADS) System Requirements (5 Users)

Optional Hardware	Any network or local printer supported by the qualified Windows operating system
Optional Software	Graphic Generation Tool

- 1 Our computer platform and memory recommendations are not meant to imply that older or slower machines are not usable. Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for more information regarding computer/server recommendations.
- 2 For best performance, use Serial Attached SCSI (SAS) hard drives, not Small Computer System Interface (SCSI) hard drives.
- 3 For improved performance in configurations where ADS and Ready Access Portal share the same computer.
- 4 For best performance, use the maximum amount of memory that the computer allows.
- 5 Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for specific Microsoft Windows operating system settings that may be required for your Metasys system configuration.
- 6 To use SQL Server 2014 with Metasys products, you must install Microsoft cumulative update package 3 (KB2984923) for SQL Server 2014. To download the update package, visit <http://support.microsoft.com/kb/2984923/>.

Extended Application and Data Server System Requirements (Unified 10 or 25 User ADX)

Table 9: Extended Application and Data Server System Requirements (Unified ADX Systems, 10 or 25 Users)

Recommended Server Platform¹	2.20 GHz E5 Series Intel Xeon® Quad Core single processor or better 2 x 600 GB hard disk (RAID 1) ² with 40 GB free space after installation of all prerequisite software and before installation of ADS software. Configure RAID 1 (mirroring) with disk write-caching turned on. DVD drive Note: ADX prerequisite software includes the Windows operating system, SQL Server software, Windows .NET Framework, and any other software or SPs required by your ADX configuration.
Recommended Memory³	16 GB RAM (10 or 25 user ADX)
Supported Operating Systems⁴ and Database Software	Windows Server® 2012 R2 (64-bit)⁵ Supports Microsoft SQL Server 2014 (64-bit) ⁶ , Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)
	Windows Server 2012 (64-bit)⁵ Supports Microsoft SQL Server 2014 (64-bit) ⁶ , Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)
	Windows Server 2008 R2 with SP1 (64-bit)⁷ Supports Microsoft SQL Server 2014 (64-bit) ⁶ , Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)
	Windows Server 2008 with SP2 (32-bit)⁷ Supports Microsoft SQL Server 2008 R2 with SP2 (32-bit) Note: A 32-bit operating system only supports a maximum of 4 GB memory. For best performance, use a 64-bit operating system.
Supported Virtual Environments	Microsoft Hyper-V™, VMware®
Supported User Interfaces	Site Management Portal (SMP) Metasys UI Ready Access Portal

Table 9: Extended Application and Data Server System Requirements (Unified ADX Systems, 10 or 25 Users)

Additional Software Included with the ADX	CCT software	Microsoft SQL Server 2012 software with SP2 (64-bit) ⁸
	Export Utility software	SCT software
	Metasys Database Manager software	Microsoft .NET Framework Version 3.5 SP1
	Launcher software	
	Note: The Metasys Advanced Reporting System requires an ADX. The SCT computer must be online and accessible to the ADX at all times.	
Optional Hardware	Any network or local printer supported by the qualified Windows operating system	
Optional Software	Energy Essentials	
	Graphic Generation Tool	

- 1 Our computer platform and memory recommendations are not meant to imply that older or slower machines are not usable. Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for more information regarding computer/server recommendations.
- 2 For best performance, use SAS hard drives (not SATA hard drives) that use RAID controllers with write caching enabled.
- 3 For best performance, use the maximum amount of memory. An ADX with 16 GB RAM has much greater performance than an ADX with only 4 GB RAM. A 32-bit operating system does not support more than 4 GB of RAM.
- 4 Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for specific Microsoft Windows operating system settings that may be required for your Metasys system configuration.
- 5 For SQL Server 2014 software or SQL Server 2012 software, you must purchase a SQL Server software license for each individual processor core (with a minimum of four core licenses). For example, if you have a single processor with dual cores, purchase four core licenses (the minimum) for SQL Server 2014 software or SQL Server 2012 software.
- 6 To use SQL Server 2014 with Metasys products, you must install Microsoft cumulative update package 3 (KB2984923) for SQL Server 2014. To download the update package, visit <http://support.microsoft.com/kb/2984923/>.
- 7 For SQL Server 2008 R2 software, you must purchase a SQL Server software license for each individual processor you have. You do not need to purchase multiple licenses if you have a single processor divided into multiple cores. For example, if you have a single processor with dual cores, purchase one license for SQL Server software.
- 8 SQL Server software is only included with the MS-ADX10SQL product.

Extended Application and Data Server System Requirements (Unified 50 or 100 User ADX)

Table 10: Extended Application and Data Server System Requirements (Unified ADX Systems, 50 or 100 Users)

Recommended Server Platform¹	Two processors: 2.20 GHz Intel Xeon® Dual Processors with a minimum of 4 cores each 6 x 300 GB 15,000 RPM hard disk (RAID 5) ² with 50 GB free space after installation of all prerequisite software and before installation of ADS software. Configure RAID 5 with disk write-caching turned on. RAID Controller-PERC H710 with 512 NV Cache DVD drive Note: ADX prerequisite software includes the Windows operating system, SQL Server software, Windows .NET Framework, and any other software or SPs required by your ADX configuration.
Recommended Memory	32 GB RAM

Table 10: Extended Application and Data Server System Requirements (Unified ADX Systems, 50 or 100 Users)

Users/

Supported Operating Systems³ and Database Software	Windows Server® 2012 R2 (64-bit)⁴ Supports Microsoft SQL Server 2014 (64-bit) ⁶ , Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)	
	Windows Server 2012 (64-bit)⁴ Supports Microsoft SQL Server 2014 (64-bit) ⁶ , Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)	
	Windows Server 2008 R2 with SP1 (64-bit)⁵ Supports Microsoft SQL Server 2014 (64-bit) ⁶ , Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)	
	Supported Virtual Environments Microsoft Hyper-V™, VMware®	
Supported User Interfaces	Site Management Portal (SMP) Metasys UI Ready Access Portal	
Additional Software Included with the ADX	CCT software	Microsoft SQL Server 2012 software with SP2 (64-bit) ⁷
	Export Utility software	Microsoft .NET Framework Version 3.5 SP1
	Metasys Database Manager software	SCT software
	Launcher software	
	Note: The Metasys Advanced Reporting System requires an ADX. The SCT computer must be online and accessible to the ADX at all times.	
Optional Hardware	Any network or local printer supported by the qualified Windows operating system.	
Optional Software	Energy Essentials	
	Graphic Generation Tool	

- 1 Our computer platform and memory recommendations are not meant to imply that older or slower machines are not usable. Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for more information regarding computer/server recommendations.
- 2 For best performance, use SAS hard drives (not SATA hard drives) that use RAID controllers with write caching enabled.
- 3 Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for specific Microsoft Windows operating system settings that may be required for your Metasys system configuration.
- 4 For SQL Server 2014 software or SQL Server 2012 software, you must purchase a SQL Server software license for each individual processor core (with a minimum of four core licenses). For example, if you have a single processor with dual cores, purchase four core licenses (the minimum) for SQL Server 2014 software or SQL Server 2012 software.
- 5 For SQL Server 2008 R2 software, you must purchase a SQL Server software license for each individual processor you have. You do not need to purchase multiple licenses if you have a single processor divided into multiple cores. For example, if you have a single processor with dual cores, purchase one license for SQL Server software.
- 6 To use SQL Server 2014 with Metasys products, you must install Microsoft cumulative update package 3 (KB2984923) for SQL Server 2014. To download the update package, visit <http://support.microsoft.com/kb/2984923/>.
- 7 SQL Server software is only included with the MS-ADX50SQL product.

Extended Application and Data Server System Requirements (Split 10 or 25 User ADX)

Table 11: Extended Application and Data Server System Requirements (Split ADX Systems, 10 or 25 Users)

Recommended Server Platform ¹	<p>Web/Application Server</p> <p>2.20 GHz E5 Series Intel Xeon® Quad Core single processor or better.</p> <p>2 x 600 GB hard disk (RAID 1)² with 40 GB free space after installation of all prerequisite software⁴ and before installation of ADS software. Configure RAID 1 (mirroring) with disk write-caching turned on.</p> <p>DVD drive</p> <p>Note: Advanced Reporting System and Energy Essentials can reside on the ADX web/application server.</p> <p>Note: Metasys UI must reside on the ADX web/application server.</p> <p>Database Server</p> <p>2.20 GHz E5 Series Intel Xeon® Quad Core single processor or better.</p> <p>2 x 600 GB hard disk (RAID 1) with 40 GB free space after installation of all prerequisite software⁴ and before installation of ADS software. Configure RAID 1 (mirroring) with disk write-caching turned on.</p> <p>DVD drive</p> <p>SCT Computer</p> <p>In a split configuration, you cannot install SCT or Ready Access Portal software on either the ADX web/application server computer or the ADX database server computer. Refer to the <i>System Configuration Tool Catalog Page (LIT-1900198)</i> for current SCT computer requirements.</p>
Recommended Memory ³	16 GB RAM (web/application server and database server for 10 or 25 user ADX)
Supported Operating Systems ^{5,6} with Supported Database Software	<p>Windows Server® 2012 R2 (64-bit)⁷</p> <p>Supports Microsoft SQL Server 2014 (64-bit)⁹, Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)</p> <p>Windows Server 2012 (64-bit)⁷</p> <p>Supports Microsoft SQL Server 2014 (64-bit)⁹, Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)</p> <p>Windows Server 2008 R2 with SP1 (64-bit)⁸</p> <p>Supports Microsoft SQL Server 2014 (64-bit)⁹, Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)</p> <p>Windows Server 2008 with SP2 (32-bit)⁸</p> <p>Supports Microsoft SQL Server 2008 R2 with SP2 (32-bit)</p> <p>Note: A 32-bit operating system only supports a maximum of 4 GB memory. For best performance, use a 64-bit operating system.</p>
Supported Virtual Environments	Microsoft Hyper-V™, VMware®
Supported User Interfaces	<p>Site Management Portal (SMP)</p> <p>Metasys UI</p> <p>Ready Access Portal</p>

Table 11: Extended Application and Data Server System Requirements (Split ADX Systems, 10 or 25 Users)

Additional Software Included with the ADX	CCT software	Microsoft SQL Server 2012 software with SP2 (64-bit) ¹⁰
	Export Utility software	Microsoft .NET Framework Version 3.5 SP1
	Metasys Database Manager software	SCT software
	Launcher software	
	Note: The Metasys Advanced Reporting System requires an ADX. The SCT computer must be online and accessible to the ADX at all times.	
Optional Hardware	Any network or local printer supported by the qualified Windows operating system.	
Optional Software	Energy Essentials	
	Graphic Generation Tool	

- 1 Our computer platform and memory recommendations are not meant to imply that older or slower machines are not usable. Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for more information regarding computer/server recommendations.
- 2 For best performance, use SAS hard drives (not SATA hard drives) that use RAID controllers with write caching enabled.
- 3 For best performance, use the maximum amount of memory. An ADX with 16 GB RAM has much greater performance than an ADX with only 4 GB RAM. Also, a 32-bit operating system only supports a maximum of 4 GB of RAM.
- 4 ADX prerequisite software includes the Windows operating system and SQL Server software, Windows .NET Framework, and any other software or service packs required for your ADX configuration.
- 5 The web/application and database servers must have the same operating system installed.
- 6 Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for specific Microsoft Windows operating system settings that may be required for your Metasys system configuration.
- 7 For SQL Server 2014 software or SQL Server 2012 software, you must purchase a SQL Server software license for each individual processor core (with a minimum of four core licenses). For example, if you have a single processor with dual cores, purchase four core licenses (the minimum) for SQL Server 2014 software or SQL Server 2012 software.
- 8 For SQL Server 2008 R2 software, you must purchase a SQL Server software license for each individual processor you have. You do not need to purchase multiple licenses if you have a single processor divided into multiple cores. For example, if you have a single processor with dual cores, purchase one license for SQL Server software.
- 9 To use SQL Server 2014 with Metasys products, you must install Microsoft cumulative update package 3 (KB2984923) for SQL Server 2014. To download the update package, visit <http://support.microsoft.com/kb/2984923/>.
- 10 SQL Server software is only included with the MS-ADX10SQL product.

Extended Application and Data Server System Requirements (Split 50 or 100 User ADX)

Table 12: Extended Application and Data Server System Requirements (Split ADX System, 50 or 100 Users)

Recommended Server Platform¹	Web/Application Server Two processors: 2.20 GHz Intel Xeon® Dual Processors with a minimum of 4 cores each 6 x 300 GB 15,000 RPM hard disk (RAID 5) ² with 50 GB free space after installation of all prerequisite software ⁴ and before installation of ADS software. Configure RAID 5 with disk write-caching turned on. RAID Controller-PERC H710 with 512 NV Cache DVD drive Note: ARS and Energy Essentials can reside on the ADX web/application server. Note: Metasys UI must reside on the ADX web/application server.
	Database Server Two processors: 2.20 GHz Intel Xeon® Dual Processors with a minimum of 4 cores each 6 x 300 GB 15,000 RPM hard disk (RAID 5) with 50 GB free space after installation of all prerequisite software ⁴ and before installation of ADS software. Configure RAID 5 with disk write-caching turned on. RAID Controller-PERC H710 with 512 NV Cache DVD drive
	SCT Computer In a split configuration, you cannot install SCT or Ready Access Portal software on either the ADX web/application server computer or the ADX database server computer. Refer to the <i>System Configuration Tool Catalog Page (LIT-1900198)</i> for current SCT computer requirements.
Recommended Memory³	32 GB RAM
Supported Operating Systems and Database Software^{5,6}	Windows Server® 2012 R2 (64-bit)⁷ Supports Microsoft SQL Server 2014 (64-bit) ⁹ , Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)
	Windows Server 2012 (64-bit)⁷ Supports Microsoft SQL Server 2014 (64-bit) ⁹ , Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)
	Windows Server 2008 R2 with SP1 (64-bit)⁸ Supports Microsoft SQL Server 2014 (64-bit) ⁹ , Microsoft SQL Server 2012 with SP2 (64-bit), or Microsoft SQL Server 2008 R2 with SP2 (64-bit)
Supported Virtual Environments	Microsoft Hyper-V™, VMware®
Supported User Interfaces	Site Management Portal (SMP)
	Metasys UI
	Ready Access Portal

Table 12: Extended Application and Data Server System Requirements (Split ADX System, 50 or 100 Users)

Additional Software Included with the ADX	CCT software	Microsoft SQL Server 2012 software with SP2 (64-bit) ¹⁰
	Export Utility software	SCT software
	Metasys Database Manager software	Microsoft .NET Framework Version 3.5 SP1
	Launcher software	
	Note: The Metasys Advanced Reporting System requires an ADX. The SCT computer must be online and accessible to the ADX at all times.	
Optional Hardware	Any network or local printer supported by the qualified Windows operating system	
Optional Software	Energy Essentials	
	Graphic Generation Tool	

- 1 Our computer platform and memory recommendations are not meant to imply that older or slower machines are not usable. Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for more information regarding computer/server recommendations.
- 2 For best performance, use SAS hard drives (not SATA hard drives) that use RAID controllers with write caching enabled.
- 3 For best performance, use the maximum amount of memory. An ADX with 32 GB RAM has much greater performance than an ADX with only 16 GB RAM. A 32-bit operating system does not support more than 4 GB of RAM.
- 4 ADX prerequisite software includes the Windows operating system and SQL Server software, Windows .NET Framework, and any other software or service packs required for your ADX configuration.
- 5 The web/application and database servers must have the same operating system installed.
- 6 Refer to the *Network and IT Guidance for the BAS Professional Technical Bulletin (LIT-12011279)* for specific Microsoft Windows operating system settings that may be required for your Metasys system configuration.
- 7 For SQL Server 2014 software or SQL Server 2012 software, you must purchase a SQL Server software license for each individual processor core (with a minimum of four core licenses). For example, if you have a single processor with dual cores, purchase four core licenses (the minimum) for SQL Server 2014 software or SQL Server 2012 software.
- 8 For SQL Server 2008 R2 software, you must purchase a SQL Server software license for each individual processor you have. You do not need to purchase multiple licenses if you have a single processor divided into multiple cores. For example, if you have a single processor with dual cores, purchase one license for SQL Server software.
- 9 To use SQL Server 2014 with Metasys products, you must install Microsoft cumulative update package 3 (KB2984923) for SQL Server 2014. To download the update package, visit <http://support.microsoft.com/kb/2984923/>.
- 10 SQL Server software is only included with the MS-ADX50SQL product.



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